# Two dealers in competition for order-flow

Consider the case of two dealers competing over the market order. Note that the size of the market order is:

Where:   
 was the size of the liquidity trader’s initial position  
 is the best (highest) bid price  
 is the liquidity trader’s risk aversion parameter, and  
 is the variance of the price.

If trader 1 has the higher bid price, s/he will receive:

If trader 1 does not have the higher bid price, he will receive:

Trader 1 will be indifferent between trading and not trading when the two are equal in expected utility, that is:

where is the reservation price.

If trader 1 assumes that the other trader’s inventory is uniformly distributed between , the optimal bid price is:

By a similar analysis, the optimal ask price is:

The analysis for trader 2 is symmetric and is:

The observed spread is:

(the individual spread at the dealer level is):

# Optimal Bid-Ask Spread with Counterparty Risk

In the presence of counterparty risk, the